

REMARKS/ARGUMENTS

The Claims:

Claims 3, 14, 15, and 31 have been canceled without prejudice to their future prosecution. These claims are not canceled in response to any statutory rejection and Applicant reserves the right to pursue the subject matter of these claims in a future application. Claims 2 and 29 have been amended merely to correct matters of form. Applicant notes that Claim 2 was amended for clarification purposes to recite the term "DNAzyme". Support for the amendment is found in the original claim and throughout the specification, for example, at page 7, line 15; page 10, lines 26-29, and pages 22-23. No new matter has been added by way of the amendments.

The Office Action:

35 U.S.C. § 103 Rejection

Claims 2-3, 6-9, 14, 29, and 31 were rejected under 35 U.S.C. § 103(a) as being obvious over Yokoyama et al. in view of Joyce et al. (WO 96/17086 A1). The rejection is traversed for the reasons set forth below.

Claims 3, 14, 15, and 31 have been canceled without prejudice. Accordingly, the rejection is moot as to these claims. The present claims are directed to a DNA enzyme (DNAzyme) molecule which specifically cleaves RNA derived from a TERT gene. Thus, to establish a *prima facie* case of obviousness, the Office must show: (1) a teaching or suggestion to cleave an RNA derived from TERT gene using a DNAzyme; and (2) a reasonable expectation of success that the DNAzyme would cleave TERT RNA. The teaching or suggestion to cleave an RNA derived from TERT gene using a DNAzyme and the reasonable expectation of its success must *both* be found in the prior art, and must *not be based on applicant's disclosure*. *In re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991); M.P.E.P. § 2143.

The Office cites Yokoyama et al. for teaching hammerhead ribozymes that target the 5'-end of the hTERT gene. However, Applicant respectfully submits that Yokoyama et al. is not prior art to the instant application. The instant application was filed on

August 31, 2000, claiming the benefit of two provisional applications, USSN 60/151,713, filed August 31, 1999 and USSN 60/197,769, filed March 14, 2000 (see Preliminary Amendment filed on May 11, 2001, amending the specification to include the priority claim, copy attached as Appendix A). Accordingly, the instant application has a priority date of August 31, 1999. The Yokoyama et al. reference was received by the Biochemical and Biophysical Research Communications Journal on May 19, 2000 and was not published until June 24, 2000. Applicant finds no evidence that the Yokoyama et al. reference was publicly available before June 24, 2000 (see Abstract from publishers, attached as Appendix B). Accordingly, Yokoyama et al. is not prior art to the instant application.

In addition, the Office alleges that Joyce et al. teaches the design and synthesis of DNAzymes. However, Joyce et al. merely provides a general description of a class of catalytic DNA molecules and does not even mention the TERT gene, much less suggest using a DNAzyme to cleave a TERT RNA substrate. In the absence of contemplation of TERT RNA as a potential substrate, there simply was no teaching or suggestion in Joyce to design and make DNAzymes targeted to TERT RNA. A general description of DNAzymes does not amount to a teaching or suggestion to make the specific DNAzyme molecules targeted to TERT RNA taught in the present application. Consequently, prior to the disclosure in the instant application, there was no motivation or suggestion to design and make DNAzymes that cleave TERT RNA. Furthermore, in the absence of any teaching whatsoever that a DNAzyme could be used to target and cleave an RNA encoding an TERT gene, one skilled in the art would have no reasonable expectation of success that a DNAzyme would cleave TERT RNA. Thus, it was only through Applicant's disclosure that it became known that a DNAzyme could be used successfully to cleave an RNA encoding TERT.

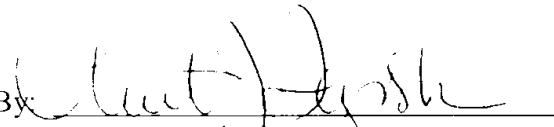
For the reasons set forth above, Joyce does not disclose a DNAzyme that cleaves an RNA derived from a TERT gene and thus does not render the present invention obvious. Accordingly, Applicant requests withdrawal of this rejection.

Conclusion:

In view of the above remarks, the application is considered to be in good and proper form for allowance and the Examiner is respectfully requested to pass this application to issue. If the Examiner believes that a telephone or personal interview would expedite prosecution of the instant application, the Examiner is invited to call the undersigned at (312) 913-0001.

Respectfully Submitted,
McDonnell Boehnen Hulbert & Berghoff

Date: June 17, 2003

By 
Anita Terpstra
Reg. No. 47,132

Appendix A



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
(MBHB Ref. No. MBHB00-929 (RPI Ref. No. 250/131US))

In re Application of: Chowrira, et al.)
Serial No.: Not Yet Assigned) Group Art Unit: Not Yet Assigned
Filed: August 31, 2000) Examiner: Not Yet Assigned
For: Method and Reagent for the Inhibition)
Of Telomerase Enzyme)

TRANSMITTAL LETTER

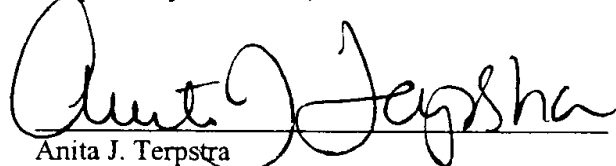
Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

In regard to the above identified application,

1. We are transmitting herewith the attached:
 - a) Preliminary Amendment
 - b) Return Receipt Postcard
2. With respect to fees:
 - a) No fee is required.
 - b) Please charge any underpayment or credit any overpayment our Deposit Account No. 132490.
3. CERTIFICATE OF MAILING UNDER 37 CFR § 1.8: The undersigned hereby certifies that this Transmittal Letter and the paper, as described in paragraph 1, are being deposited with the United States Postal Service with sufficient postage as First Class Mail in an envelope addressed to the Commissioner for Patents, Washington, D.C. 20231 on May 11, 2001.

Respectfully submitted,


Anita J. Terpstra
Registration No. 47,132

Date: May 11, 2001



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
(Case No. MBHB00,882-C 250/131)

In re Application of:)
)
Chowrira et al.) Group Art Unit: 1651
)
Serial No.: 09/653,225) Examiner: Not Assigned
)
Filed: August 31, 2000)
)
For: **METHOD AND REAGENT FOR THE**)
 INHIBITION OF TELOMERASE)
 ENZYME)

Commissioner of Patents
Washington, D.C. 20231

PRELIMINARY AMENDMENT

Sir:

Applicant respectfully request that this amendment be entered prior to examination of the above-mentioned application on the merits. It is believed that no fee is due for filing this response; however, if a fee is due, the Commissioner is authorized to charge our Deposit Account No. 132490.

IN THE SPECIFICATION:

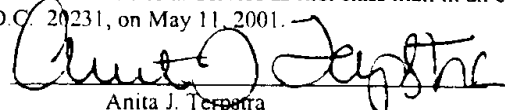
Please insert the following paragraph below the title:

"This patent application claims priority to U.S. provisional application serial number 60/151,713 filed on August 31, 1999, and U.S. provisional application serial number 60/197,769 filed on March 14, 2000. Each of these applications are hereby incorporated by reference herein in their entirety including the drawings."

CERTIFICATE OF MAILING (37 C.F.R. 1.8a)

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to the: Assistant Commissioner for Patents, Washington D.C. 20231, on May 11, 2001.

Date: May 11, 2001


Anita J. Terpatra

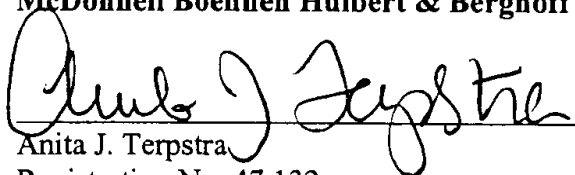
REMARKS

Specification

Applicant respectfully requests that the Specification be amended to include the priority data. If the Examiner has any questions regarding this Preliminary Amendment, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,

McDonnell Boehnen Hulbert & Berghoff


Anita J. Terpstra
Registration No. 47,132

McDONNELL BOEHNEN
HULBERT & BERGHOFF
300 South Wacker Drive
Chicago, Illinois 60606
312/913-0001 (telephone)
312/913-0002 (facsimile)

Hon. Commissioner of Patents and Trademarks
S/N: 09/653,225
Atty: AJT/LJAD
Case No.: MBHB00,882-C 250/131
Re: Applicant - Chowrira, et al.

**METHOD AND REAGENT FOR THE INHIBITION OF TELOMERASE
ENZYME**

Sir:
Please place the Patent Office receipt stamp hereon and mail to acknowledge receipt of:

- ☒ Transmittal Letter
- ☒ Preliminary Amendment

Fee Enclosed: \$ -0-
Date Mailed: May 11, 2001

Respectfully,
McDonnell Boehnen Hulbert & Berghoff
Attorney for Applicant

UNITED STATES PATENT AND TRADEMARK OFFICE
(Case No. MBHB00-882-C; 400/019)

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
84

Confirmation No.: 4785

Application No. 09/653,225
Amendment date June 17, 2003
Response to Office Action mailed 12/17/2002
Attorney Docket No.: MBHB00-882-C (400/019)

Appendix B



SCIENCE @ DIRECT

Register or Login:

Password:



At the

[Home](#)

[Journals](#)

[Abstract Databases](#)

[Reference Works](#)

[My Alerts](#)

[My Profile](#)

[? Help](#)

WELCOME GUEST USER [Info](#)

53 of 65 [results list](#) [previous](#) [next](#)

Biochemical and Biophysical Research Communications

Volume 273, Issue 1, 24 June 2000, Pages 316-321

doi:10.1006/bbrc.2000.2939 [? Cite or link using doi](#)
Copyright © 2000 Academic Press. All rights reserved.

This Document

► **Abstract**

- Abstract + References
- PDF (96 K)

Regular Article

Actions

- E-mail Article

The 5'-End of hTERT mRNA Is a Good Target for Hammerhead Ribozyme to Suppress Telomerase Activity

Yasuhiro Yokoyama¹, Yuichiro Takahashi, Ariyoshi Shinohara, Xiaoyun Wan, Seiji Takahashi, Kenji Niwa and Teruhiko Tamaya

Department of Obstetrics and Gynecology, Gifu University School of Medicine, 40 Tsukasa-machi, Gifu, 500-8705, Japan

Received 19 May 2000. Available online 27 March 2002.

Abstract

Because the expression level of hTERT, a catalytic subunit of human telomerase, is a rate-limiting determinant of telomerase activity, hTERT mRNA would be an excellent target of hammerhead ribozymes for the regulation of telomerase activity. We studied the efficiency of several hammerhead ribozymes targeting hTERT mRNA by transient and stable transfection procedures. To screen the potency of the ribozymes, transient ribozyme transfection and telomerase determination were performed. The ribozyme targeting 13 nucleotides downstream from the 5'-end of hTERT mRNA (13-ribozyme) exhibited the strongest telomerase-inhibitory activity, and the ribozyme to target 59 nucleotides upstream from the poly(A) tail showed clear activity. A stable transfection study confirmed that the 13-ribozyme suppressed telomerase. These observations suggest that the 13-ribozyme can regulate telomerase activity and may possess potential for cancer therapy.

Author Keywords: hammerhead ribozyme; endometrial carcinoma; transient transfection; catalytic subunit of telomerase; RT-PCR

¹ To whom correspondence should be addressed. Fax: 81-58-265-9006. E-mail:

yokoyama@cc.gifu-u.ac.jp.

Biochemical and Biophysical Research Communications
Volume 273, Issue 1 , 24 June 2000 , Pages 316-321

This Document

- **Abstract**
- Abstract + References
- PDF (96 K)

Actions

- E-mail Article

53 of 65

results list

◀ previous

next ▶

[Home](#)

[Journals](#)

[Abstract Databases](#)

[Reference Works](#)

[My Alerts](#)

[My Profile](#)

[? Help](#)

Send feedback to ScienceDirect

Software and compilation © 2003 ScienceDirect. All rights reserved.

ScienceDirect® is an Elsevier Science B.V. registered trademark.

Your use of this service is governed by Terms and Conditions. Please review our Privacy Policy for details on how we protect information that you supply.